



$$\begin{aligned}
 1.3 \quad & (A \wedge \bar{B}) \vee (A \wedge \bar{B} \wedge C) \\
 \stackrel{\text{Dist.}}{=} & (A \wedge \bar{B}) \wedge (C \vee \underline{1}) \\
 \stackrel{\text{Id.}}{=} & (A \wedge \bar{B}) \wedge (1) \\
 = & (A \wedge \bar{B}) \\
 = & \underline{\underline{A \wedge \bar{B}}}
 \end{aligned}$$

$$\begin{aligned}
 1.4 \quad & (A \vee \bar{B} \wedge A) \wedge (C \vee (D \vee C)) \\
 \stackrel{\text{Asso}}{=} & \wedge (C \vee D \vee C) \\
 & \wedge (C \vee C \vee D) \\
 & \wedge (C \vee D) \\
 = & (A \vee \bar{B} \vee \bar{A}) \wedge (C \vee D) \\
 = & (A \vee \bar{A} \vee \bar{B}) \wedge (C \vee D) \\
 = & (1 \vee \bar{B}) \wedge (C \vee D) \\
 = & 1 \wedge (C \vee D) \\
 = & \underline{\underline{C \vee D}}
 \end{aligned}$$

$$\begin{aligned}
 1.5 \quad & (\overline{A \wedge B \vee \bar{C}}) \wedge (\bar{A} \vee B \vee \bar{C}) \\
 &= (\bar{A} \vee \bar{B} \vee \bar{C}) \wedge (\bar{A} \vee B \vee \bar{C}) \\
 &= (\bar{A} \vee \bar{C}) \vee (\bar{B} \wedge B) \\
 &= (\bar{A} \vee \bar{C}) \vee 0 \\
 &= \underline{\underline{\bar{A} \vee \bar{C}}}
 \end{aligned}$$

$$\begin{aligned}
 1.6 \quad & \overline{A \wedge B \vee C} \vee (A \wedge C) \\
 &= \overline{A \wedge B \wedge \bar{C}} \vee (A \wedge C) \\
 &= A \wedge (C \vee B \wedge \bar{C}) \vee C \\
 &= A \wedge ((B \vee C) \wedge (\bar{C} \vee C)) \\
 &= A \wedge ((B \vee C) \wedge 1) \\
 &= A \wedge (B \vee C)
 \end{aligned}$$

$$\begin{aligned}
 1.8 \quad & A \vee (\bar{B} \wedge A \vee \bar{B} \vee C) \\
 &= A \vee (\bar{B} \wedge (\bar{A} \wedge B \wedge \bar{C})) \\
 &= A \vee (\bar{B} \wedge B \wedge \bar{A} \wedge \bar{C}) \\
 &= A \vee (0 \wedge \bar{A} \wedge \bar{C}) \\
 &= A \vee 0 \\
 &= A
 \end{aligned}$$

$$\begin{aligned}
 & (\bar{A} \wedge B \wedge C) \vee (A \wedge B \wedge C) \vee (\bar{B} \wedge \bar{C} \wedge A) \vee (\bar{B} \wedge \bar{C} \wedge \bar{A}) \\
 &= [(B \wedge C) \wedge (\bar{A} \vee A)] \vee [(B \wedge \bar{C}) \wedge (A \vee \bar{A})] \\
 &= [(B \wedge C) \wedge 1] \vee [(B \wedge \bar{C}) \wedge 1] \\
 &= (B \wedge C) \vee (B \wedge \bar{C})
 \end{aligned}$$

$$(A \wedge B \wedge C) \vee (A \wedge B \wedge \overline{C}) \vee (A \wedge \overline{B} \wedge C) \vee (A \wedge \overline{B} \wedge \overline{C})$$

$$(A \wedge B) \wedge (C \vee \overline{C}) \vee (A \wedge \overline{B}) \wedge (C \vee \overline{C})$$

$$(A \wedge B) \vee (A \wedge \overline{B})$$

$$A \wedge (B \vee \overline{B})$$

$$A \wedge 1$$

$$A$$

$$=$$